

Lesson Plan 3

Title:	Lesson 3: Exploring the Historical and Legal Background for Cleanup
Target Grade Levels:	Grades 11-12
Time Allotted:	1–2 class periods
Instructor:	
Method of Instruction:	Lecture, small group discussion, individual learning

Instructional Goal

Upon completion of the unit, the student will be able to describe stewardship activities and issues relating to the Department of Energy's activities on the Oak Ridge Reservation.

Lesson Objectives

- ☐ Begin two-part exploration of the history of the Manhattan Project
- ☐ Explore the legal basis of the environmental cleanup program

Materials & Resources

- ☐ Glossary
- ☐ Video Description for "The Manhattan Project"

Visual Aids

- ☐ Course Overhead Transparencies—Lesson Plan 3
- ☐ "The Manhattan Project" Video

Handouts

- ☐ Environmental Laws and Regulations Fact Sheet
- ☐ Crossword Puzzle—Long Term Stewardship
- ☐ Question List for Video "The Manhattan Project"

Vocabulary (refer to Glossary for definitions)

- ☐ Federal Facility Agreement
- ☐ Long-term remedial response action
- ☐ Manhattan Project
- ☐ Short-term removal

Section	Instruction	Visual Aids
1.0	<p><u>Course Goal</u></p> <p><i>Review course goal:</i></p> <p>Upon completion of the unit, the student will be able to describe stewardship activities and issues relating to the Department of Energy's activities on the Oak Ridge Reservation.</p>	OVERHEAD 1: Stewardship on the Oak Ridge Reservation
2.0	<p><u>Lesson 3 Objectives</u></p> <p><i>Review objectives:</i></p> <ul style="list-style-type: none"> • Begin exploration of the history of the Manhattan Project • Explore the legal background of the environmental cleanup program 	OVERHEAD 2: Lesson Objectives
3.0	<p><u>The History of the Manhattan Project</u></p> <p><i>Distribute question list handout. Provide a brief introduction of the subject and show the first half (25minutes) of "The Manhattan Project" video. This video will give students the background necessary to understand why DOE facilities on the Oak Ridge Reservation were constructed and why the contamination exists there today.</i></p> <p>The "Manhattan Project" was the code name for the development of the atom bomb by the U.S. Army during World War II. Several sites had important roles in making the atom bomb: Oak Ridge, Tennessee; Chicago, Illinois; Los Alamos, New Mexico; and Hanford, Washington. Oak Ridge was chosen as a site for the Manhattan Project because of the presence of the Tennessee Valley Authority and its ability to meet the electricity needs of the enriched uranium production plants. It was also chosen because the ridges would help hide the newly constructed production plants. The "Secret City" began with the government acquisition of 58,575 acres. Residents who farmed the area were bought out by the government and relocated. The industrial complexes were built in record time.</p>	"The Manhattan Project" Video
4.0	<p><u>The Legal Background of Cleanup</u></p> <p><i>Give an overview of how environmental cleanup has been driven by federal legislation to provide students with an understanding of how the cleanup process is structured from a legal standpoint. Background information can be found beginning on page 16 of the "Oak Ridge Reservation</i></p>	

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	<p><i>Stakeholder Report on Stewardship, Vol. 1" (on CD).</i></p> <p>The federal laws governing hazardous waste cleanup mandate that federal, state, and local interests be represented in any legal agreements and that the public must have an avenue of input. In 1992, a Federal Facility Agreement (FFA) was signed by DOE, the Environmental Protection Agency (EPA), and the Tennessee Department of Environment and Conservation (TDEC) to provide a framework for interaction on environmental cleanup of the Oak Ridge Reservation. The FFA is based on principles set forth in the main law regarding cleanup: the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).</p> <p>CERCLA, commonly known as "Superfund," was enacted by Congress in 1980. It created a tax on the chemical and petroleum industries and provided a broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.</p> <p>CERCLA was designed to:</p> <ul style="list-style-type: none"> • Establish restrictions and requirements concerning closed or abandoned hazardous waste sites. • Provide for liability of persons responsible for releases of hazardous waste at these sites. • Establish a trust fund to provide for cleanup when no responsible party could be identified. <p>CERCLA authorized two kinds of response actions:</p> <ul style="list-style-type: none"> • Short-term removals, where actions may be taken to address releases requiring prompt response. • Long-term remedial response actions, which permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious but not immediately life threatening. These actions can be conducted only at sites listed on EPA's National Priorities List, a ranked listing of hazardous waste sites. 	
4.1	<p><u>The Federal Facility Agreement</u></p> <p>CERCLA requires a legally binding interagency agreement among agencies (in this case, the Department of Energy, EPA, and TDEC) to establish timetables, procedures, and documentation for cleanup of federal facilities on the National</p>	

Section	Instruction	Visual Aids
	<p>Priorities List. This agreement is called the FFA.</p> <p>The purposes of the FFA are to:</p> <ul style="list-style-type: none"> • Ensure that the environmental impacts associated with past and present activities at the Oak Ridge Reservation are thoroughly investigated and that appropriate remedial action is taken to protect public health and the environment. • Establish a framework and schedule for developing, implementing, and monitoring response actions at the site in accordance with the various state and national laws and regulations. <p>CERCLA gives TDEC and EPA the legal authority to hold the Department of Energy accountable for the agreed-upon cleanup levels and deadlines.</p>	
4.2	<p><u>FFA Reports</u></p> <p>The FFA requires an annual report on cleanup activities. This report is called the <i>Remediation Effectiveness Report (RER) for the Oak Ridge Reservation</i>. It contains descriptions of ongoing cleanup actions and monitoring requirements, summaries and analyses of monitoring results, and recommendations on revisions to monitoring.</p> <p>In addition to the annual RER, the FFA requires a five-year review of <u>completed</u> cleanup projects if they result in hazardous substances, pollutants, or contaminants remaining on the Oak Ridge Reservation. This allows authorities to determine if remediation activities are continuing to be protective of human health and the environment. If it is determined that additional action is appropriate, then the Department of Energy is required to submit a proposal to implement corrective actions.</p> <p>The five-year review has been recently incorporated into the RER, so it now provides information about ongoing and completed projects. The RER provides an excellent format to document cleanup activities and residual contamination and publicize remediation effectiveness to the public. In this respect, the RER is a valuable resource in fulfilling the long-term stewardship requirements for information maintenance and accessibility of information by the public and other stewards.</p>	OVERHEAD 3: RER

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4.3	<p><u>Legal Requirements for Stewardship</u></p> <p>Although CERCLA provides the legal requirements for site cleanup, no requirements currently exist in law for stewardship. Many people and organizations, including the Oak Ridge Site Specific Advisory Board, are pressing the government to make stewardship legally binding in an effort to help ensure the long-term protection of human health and the environment.</p> <p>To be truly effective, stewardship planning should be integrated early in the CERCLA decision-making process any time contamination is to remain on site. This will allow decision-makers to compare the cost-effectiveness of remediation alternatives in relation to the cost of institutional controls, physical barriers, and surveillance and maintenance. It will also allow for more comprehensive consideration of the various uses for contaminated lands.</p>	
5.0	<p><u>Small Group Discussion</u></p> <p><i>Assign groups to answer one or more questions from the viewgraph topic list.</i></p>	OVERHEAD 4: Topic list
6.0	<p><u>Activity</u></p> <p><i>Distribute the Long-Term Stewardship crossword puzzle covering the legal and public aspects of stewardship.</i></p>	
7.0	<p><u>Lesson Summary</u></p> <p><i>Review objectives, and summarize what was learned in this lesson.</i></p>	OVERHEAD 5: Lesson Objectives